

REMARKS - GENERAL

The following remarks are keyed to reference (a) paragraphs. For convenience and efficiency, the Examiner's action and/or comments are summarized at the beginning of each. Applicant has presented what Applicant believes to be the primary object of the Examiner's action and/or comment in **bold face type**:

Para	Remark
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1st *Examiner's action/comment:*

"New corrected drawings...are required in this application because original Application 10/729,765 figures 1 and 2 should be labeled "Prior Art" since these only illustrate known features from Petersen Patent 5,679,258...The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance."

Applicant's response:

Disregarding the item numbering and orientation differences that exist between Patent 5,679,258 Figure Nos 1 and 2 and original Application 10/729,765 Figure Nos 1 and 2, respectively, original Application 10/729,765 Figure Nos 1 and 2 nevertheless differ (albeit subtly) from Patent 5,679,258 Figure Nos 1 and 2, respectively, as follows:

1.1. Patent 5,679,258 Figure No 1 depicts air, grit, sediment, particulates, and floating debris removal from the "inflow" stream in one single process element, whereas original Application 10/729,765 Figure No 1 disjoins and isolates the air removal process element from, and then shifts it subsequent to, the grit, sediment, particulates, and floating debris removal process element. Original Application 10/729,765 Figure No 3 depicts this process element isolation aspect in detail. Original Application 10/729,765 package "Summary of the Invention - Objectives and Advantages" paragraph (4) presents the reasoning for this process element isolation.

1.2. Patent 5,679,258 Figure No 2 depicts an air void space in contact with the Light Phase liquid only, whereas original Application 10/729,765 Figure No 2 depicts an air void space in direct contact with both the Light Phase liquid and the Heavy Phase liquid. Original Application 10/729,765 Figure No 3 depicts this functional aspect in detail. Original

Application 10/729,765 package "Summary of the Invention - Objectives and Advantages" paragraph (3) is relevant to this diagrammatic difference distinction.

For the reasons stated above, Applicant submits that new corrected drawings are not required, which would therefore render as null and void the Examiner's last two sentences regarding original Application 10/729,765 abandonment.

2nd Examiner's action/comment:

Rejects all original Application 10/729,765 Claims under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention.

Applicant's response:

Applicant submits that amended Claims 20(q), 20(r), 20(s), 20(dd), 20(ee), 25, 26, and 28, as introduced in the amended claims section above, now particularly point out and distinctly claim the subject matter that Applicant regards as the invention. If Examiner concludes otherwise, Applicant refers Examiner to section on page 26 of this Amendment C document package entitled: "**REQUEST FOR CONSTRUCTIVE ASSISTANCE**".

3rd Examiner's action/comment:

Asserts that original Application 10/729,765 Claims 1(q), 1(r), 1(s), 1(dd), 1(ee), and at least Claims 7, 9, 14, and 16 contain **vague and indefinite terminology**.

Applicant's response:

Applicant, through new Claims 20(q), 20(r), 20(s), 20(dd), 20(ee), 26, and 28, as introduced in the amended claims section above, submits that this deficiency is now rectified to the best of his ability and knowledge. Given that the text of Claim 33 and Claim 35 replicate the text of successful Patent 5,679,258 Claim 13 and Claim 15, respectively, Applicant therefore requests Examiner's assistance to effectuate proper verbiage for new Claim 33 and new Claim 35.

4th Examiner's action/comment:

States that Claim 6 scope of "being more or less vertical" is **unclear**.

Applicant's response:

Applicant, through new Claim 25 as introduced in the amended claims section above, submits that this deficiency is now rectified to the best of his ability and knowledge.

5th *Examiner's action/comment:*

Quotes 35 USC 103(a).

Applicant's response:

Acknowledged.

6th *Examiner's action/comment:*

Cites concluded litigation regarding establishment of a background for determining obviousness.

Applicant's response:

Acknowledged.

7th *Examiner's action/comment*^[2]

7.1. In first sentence, **rejects original Application 10/729,765 Claims 1 - 19 under 35 USC 103(a)** as being unpatentable over Petersen Patent 5,679,258 in view of Anderson Patent 4,521,312.

7.2. In second sentence, Applicant believes^[1] that Examiner is stating that Petersen Patent 5,679,258 reveals prior art that original Application 10/729,765 Claim 1 preamble and Claims 1(a), 1(b), 1(j), 1(k), 1(l), 1(m), 1(r), 1(s), 1(t), 1(ff), 1(gg), and 1(hh) all now explicitly claim.

7.3. In third sentence, Applicant believes^[1] that Examiner is stating that Anderson Patent 4,521,312^[2] reveals following prior art:

7.3.1. **4-chambered vacuum tank** that original Application 10/729,765 Claims 1(c), 1(d), 1(e), 1(f), 1(g), 1(h), 1(i), 1(r), and 1(s) now claim.

7.3.2. **Overflow weir edges** that original Application 10/729,765 Claims 1(n), 1(o), 1(p), and 1(q) now claim.

7.3.3. **Outlets with conduits, flow control valves, and pumps that original Application 10/729,765 Claims 1(w), 1(x), and 1(y) now claim.**

7.3.4. **Level and interface sensors that original Application 10/729,765 Claims 1(u), 1(v), and 1(w) now claim.**

[¹] **SPECIAL NOTE TO EXAMINER:** if Applicant has incorrectly interpreted Examiner's comment here, Applicant requests that Examiner provide clarification to Applicant.

[²] **SPECIAL NOTE TO EXAMINER:** Applicant believes that reference to '312 Patent is incorrect, and should instead read Petersen Patent 5,679,258 (i.e., '258). If Applicant's conclusion is incorrect, Applicant requests that Examiner provide clarification to Applicant.

Applicant's response:

7.1. Acknowledged.

7.2. Presuming that Applicant has interpreted Examiner's comment accurately (see Special Note [1] above), then Applicant agrees that those original Application 10/729,765 claim parts that Examiner cites do indeed address some, but not all, elements and features that Petersen Patent 5,679,258 reveals. Applicant submits that this is acceptable patent practice, since claims are read "in total" (i.e., without partitions, which only serve to render long and/or complicated claims more readable). Thus, when read in total, original Application 10/729,765 Claim 1 encompasses more, and different, art than Petersen Patent 5,679,258 reveals or implies.

7.3. Presuming that Applicant has interpreted Examiner's comment accurately (see Special Note [1] above), and presuming that Petersen Patent 5,679,258 is indeed the correct reference (see Special Note [2] above), then Applicant:

7.3.1. Submits that Petersen Patent 5,679,258 does not reveal 4-chambered vacuum tank (including equalization chamber, main gross phase separation chamber, heavy phase sump, and light phase sump) that original Application 10/729,765 Claim 1(c) addresses. None of Petersen Patent 5,679,258 Figure 4 items 28, 61, 37, 25A, or 25B define or

delineate aforementioned chambers and sumps of original Application 10/729,765.

Petersen Patent 5,679,258 Figure 4 floor 28 and wall 61, together with vacuum tank 51, define chamber 11, which collects and stores grit, sediment, particulates, and floating debris. Original Application 10/729,765 Claim 2 provides this grit, sediment, particulates, and floating debris removal function by using filters, strainers, screens, etc in inflow stream prior to, and separate from, air removal step. Petersen Patent 5,679,258 Figure 4 floating light phase vertical barrier plate 37 serves same functional purpose as original Application 10/729,765 Claim 6 separated light phase anti-disturbance partition wall, but does not define any aforementioned chamber of original Application 10/729,765. Finally, Petersen Patent 5,679,258 Figure 4 horizontal flow deflectors 25A and 25B serve to re-direct vertical inflow to horizontal and to prevent heavy phase ingestion into light phase pump inlet, respectively, and do not define any aforementioned chamber of original Application 10/729,765.

7.3.2. Notes that original Application 10/729,765 Claims 1(n) and 1(q) do not mention term "weirs", and submits that, even though original Application 10/729,765 Claims 1(o) and 1(p) both do indeed mention term "weirs", Petersen Patent 5,679,258 does not reveal overflow weir edges that original Application 10/729,765 Claims 1(o) and 1(p) address. Petersen Patent 5,679,258 does not identify top edge of Figure 4 floating light phase vertical barrier plate 37 as weir, nor describe functional purpose of said top edge as weir for conventional liquid level control purposes or otherwise. Spatial definition and functional purposes of original Application 10/729,765 Claim 1(o) and Claim 1(p) weirs differ significantly from spatial definition and functional purpose of Petersen Patent 5,679,258 Figure 4 horizontal overflow weir 62. Original Application 10/729,765 Claim 1(o) weir establishes tops of both main gross phase separation chamber space and light phase sump. Original Application 10/729,765 Claim 1(p) weir establishes tops of both heavy phase equalization chamber and heavy phase sump. Petersen Patent 5,679,258 Figure 4 horizontal overflow weir 62 establishes top of grit, sediment, and floating debris removal/collection chamber 11, which is the only explicitly identified chamber inside the vacuum tank of that Patent. From a functional perspective, original Application 10/729,765 Claim 1(o) and Claim (p) weirs, given their prescribed relative elevation differences, ensure, in conjunction with each other, that separated light phase liquid removal from vacuum tank from fixed/stationary (vs movable/variable) withdrawal location occurs consistently, which is functional purpose of Petersen Patent 5,679,258 Figure 4 phase interface sensor in conjunction with Petersen

Patent 5,679,258 Figure 4 pipe elbow 26A. Petersen Patent 5,679,258 Figure 4 horizontal overflow weir 62 serves no similar purpose. Petersen Patent 5,679,258 Figure 4 horizontal overflow weir 62, in addition to defining Petersen Patent 5,679,258 Figure 4 grit, sediment, and floating debris removal/collection chamber 11 top, converts point/pipe, relatively fast/turbulent, discharge flow from Petersen Patent 5,679,258 Figure 4 mixed immiscible liquids collection conduit 15 to non-point/linear, slower/laminar, flow.

7.3.3. Notes that original Application 10/729,765 Claim 1(w) does not mention term "outlet" and that original Application 10/729,765 Claims 1(x) and 1(y) both do indeed mention term "outlets", and agrees that Petersen Patent 5,679,258 effectively reveals these items. However, Applicant contends that this similarity is ultimately immaterial, since, as submitted in paragraph 7.2 above, US Patents may, and routinely do, claim pieces or elements of prior art (regardless of patent status), provided that the patent claim, when read in total without partitions, does not claim prior art.

7.3.4. Notes that no original Application 10/729,765 Claim mentions term "interface sensor" (since original Application 10/729,765 system does not use such device) and original Application 10/729,765 Claims 1(u), 1(v), and 1(w) all do mention level sensors ("level sensing means" to be exact), and agrees that Petersen Patent 5,679,258 effectively reveals these items. However, Applicant submits that this similarity is ultimately immaterial for same reasons described in paragraph 7.3.3 above.

8th *Examiner's action/comment:*

8.1. In first sentence, notes that original Application 10/729,765 Claims differ from Petersen Patent 5,679,258 by requiring, for [both influent and effluent] flow control purposes, upper and lower surface level sensors in heavy phase and in light phase sumps.

8.2. In second sentence, notes (with citation) that Petersen Patent 5,679,258 states that system of that Patent **can separate plural immiscible liquid f[r]actions from diverse sources**, including restaurants.

8.3. In third sentence, notes (with citation) that Anderson Patent 4,521,312 **reveals a gravity separator** for separating multiple immiscible liquid f[r]actions from sources such as food preparation areas, in which said gravity separator's separation tank upper and lower sections

have upper and lower level sensors that actuate flow controllers from different levels of separation tank.

8.4. In fourth sentence, asserts that it would have been **obvious** to one of ordinary skill in art at time of invention to have **modified Petersen Patent 5,679,258** system by incorporating sensors and level controllers of Anderson Patent 4,521,312 system to ensure withdrawal of relatively pure liquid phases from separation tank.

Applicant's response:

8.1 Applicant notes that this is but one difference between original Application 10/729,765 Claims and Petersen Patent 5,679,258. Multiple other significant differences also exist as outlined in original Application 10/729,765 "Background - Discussion of Prior Art" section.

8.2 Applicant notes that this is but one purpose of original Application 10/729,765 system; many other purposes exist. Applicant also notes that original Application 10/729,765 system can only separate two (and no more than two) immiscible liquids into their respective phases.

8.3 Applicant notes that Anderson Patent 4,521,312 Figure 1 items 32, 30, 28, and 33 are level sensors/sensing means, but that items 38, 40, 36, and 39 are not; the latter being logic/signal devices (i.e., switches) that connect and react to respective elevational positions of level sensors 32, 33, 28, and 33. Applicant also notes that Anderson Patent 4,521,312 Figure 1 switches 38, 36, and 39 actuate valves 26, 24, and 25, respectively, but switch 40 does not.

8.4 Discounting fact that Anderson Patent 4,521,312 system can separate up to three variable-density mixed immiscible liquids, but Petersen Patent 5,679,258 system can only separate two such liquids, and ignoring fact that Petersen Patent 5,679,258 shows grit, sediment, particulate, and floating debris removal means inside separation (i.e., vacuum) tank/vessel, which can exist outside said tank/vessel, Applicant notes following several close physical and functional similarities between Anderson Patent 4,521,312 system and Petersen Patent 5,679,258 system, and differences between these two Patented systems and original Application 10/729,765 system, which together work in concert against "obviousness" (partial list):

Patented Systems: Similarities	Application System Differences from Patented systems
Separation vessel vertically oriented.	Separation vessel horizontally oriented.
Separation vessel internal space single chambered/unpartitioned.	Separation vessel internal space multi-chambered/partitioned using physical walls.
All separation vessel liquid level sensor's relative elevational positioning to each other is critical to ensure satisfactory system operation.	Only separation vessel light phase sump liquid level sensor's relative elevational positioning to one another, and separation vessel heavy phase sump liquid level sensor's relative elevational positioning to one another, is critical to ensure satisfactory system operation.
All separation vessel liquid level sensor's individual specific gravity relative to each other is absolutely critical to ensure satisfactory system operation, since separation vessel liquid level sensors can contact any liquid introduced into system under normal operating circumstances.	Separation vessel liquid level sensor's individual specific gravity relative to each other is less critical to ensure satisfactory system operation, since separation vessel liquid level sensors can contact only one liquid under normal operating circumstances, i.e., minimum requirement is that separation vessel heavy phase liquid level sensors specific gravity must be less than heavy phase liquid specific gravity, and separation vessel light phase liquid level sensors specific gravity must be less than light phase liquid specific gravity. Furthermore, all separation vessel level sensors can use same specific gravity, if said separation vessel level sensor specific gravity is less than light phase liquid specific gravity.
All separation vessel liquid level sensors vulnerable to emulsified oil fouling, which can cause separated liquid to escape from other than its design outlet.	Only separation vessel light phase sump liquid level sensors vulnerable to emulsified oil fouling, which will not cause separated oil to escape through water outlet.

Patented Systems Similarities	Application System Differences from Patented systems
At least one separation vessel liquid level sensor detects liquid level interface, which is essential to system functionality.	No separation vessel liquid level sensor detects liquid level interface.

In view of above noted Patented systems similarities and Patented systems/Application system differences, and since Petersen Patent 5,679,258 system, absent emulsified oil introduction, already provided reliable withdrawal of relatively pure liquid phases from separation vessel, Applicant contends that it would not have been obvious to a person of ordinary skill in the art to modify Petersen Patent 5,679,258 system, in context of Anderson Patent 4,521,312, to invent system of original Application 10/729,765 to (as Examiner remarks): "...ensure withdrawal of relatively pure liquid phases from the separation tank.".

As noted in original Application 10/729,765 "Summary of the Invention - Objectives and Advantages" section paragraphs (1) - (4), original Application 10/729,765 intends to remedy all original Application 10/729,765 "Background - Discussion of Prior Art" section-identified problems and disadvantages. Accordingly, original Application 10/729,765:

- (1) Resolves interface sensor emulsified oil fouling problem/consequences by substituting strategically located baffles, some with specially designed weirs, for said interface sensor, and
- (2) Prevents undesirable/inadvertent escape of heavy phase liquid through light phase liquid outlet by physically isolating separated light phase extraction outlet from any heavy phase liquid contact, and
- (3) Minimizes main separation chamber floating oil layer agitation/emulsification problem by permanently reducing potential height of that oil layer, and
- (4) Reduces intervals between, and reduces time consumption involved with, grit, sediment, particulate, and floating debris removal chamber maintenance evolutions by converting to standard prefilter/strainer elements/cartridges,

none of which Anderson Patent 4,521,312, together with Petersen Patent 5,679,258 patent, suggest. In inventing original Application 10/729,765 system, Applicant first established weir-and sump-based vacuum tank partitioning/configuration. Only then could/did Applicant engage

next system design step, which involved identifying means to extract separated/isolated liquid phases from vacuum tank.

In conclusion, Applicant submits that tacitly acknowledged (i.e., no 35 USC 102 rejection) novel physical distinctions of Application/Amendment are also unobvious under 35 USC 103 in that:

- (1) Results achieved by invention are critically superior to prior art, and
- (2) Prior art lacks any suggestion that reference should be modified in a manner required to meet claims, and
- (3) Up to now those skilled in art never appreciated advantages of invention, although it is inherent, and
- (4) Invention omits element of prior art device without loss of capability, and
- (5) If in fact invention were in fact obvious, because of its advantages, those skilled in art surely would have implemented it by now, and
- (6) Examiner has not presented convincing line of reasoning to support why claimed subject matter as a whole, including differences over prior art, would have been obvious.

Therefore, Applicant submits that Claims 1 - 19 are allowable over cited reference, and Applicant respectfully solicits Examiner's reconsideration and allowance.

9th *Examiner's action/comment:*

States that original Application 10/729,765 dependent Claims 2 - 4 and 8 - 18 correspond to various Petersen Patent 5,679,258 dependent claims.

Applicant's response:

Acknowledged with understanding that this does not pose correctable defect, since dependent claims only read with host independent claim. Thus if Examiner ultimately allows host independent claim (original or amended), then Examiner by default also automatically allows corresponding defect-free dependent claim(s). For example, Petersen Patent 5,679,258 also used dependent claims from Petersen Patent 4,623,452. See also paragraph 7.2 above.

10th *Examiner's action/comment:*

States that Petersen Patent 5,679,258 Figure 4 illustrates roof panel and connected vertical flow wall 62 or 35 and anti-disturbance partition wall 37 that original Application 10/729,765 [dependent] Claims 5 - 7 address.

Applicant's response:

- 10.1 Petersen Patent 5,679,258 Figure 4 does not illustrate or incorporate roof panel that original Application 10/729,765 dependent Claim 5 describes.
- 10.2 Petersen Patent 5,679,258 Figure 4 item 62 is "horizontal overflow weir", which original Application 10/729,765 Figure 3 separated light phase anti-disturbance baffle 131 top effectively mimics from functional perspective.
- 10.3 Petersen Patent 5,679,258 Figure 4 item 35 is "perforated air baffle plate", which original Application 10/729,765 does not incorporate.
- 10.4 Petersen Patent 5,679,258 Figure 4 item 37 is "floating light phase vertical barrier plate", which, although taller than similar original Application 10/729,765 Figure 3 separated light phase anti-disturbance baffle 131, nevertheless serves exact same functional purpose as aforementioned baffle, and which original Application 10/729,765 dependent Claim 6 addresses. Applicant's 9th paragraph response above regarding dependent claims applies.
- 10.5 Examiner's original Application 10/729,765 dependent Claim 7 reference appears irrelevant to Examiner's discussion of roofs and barrier walls here.

11th *Examiner's action/comment:*

Directs Applicant to Petersen Patent 5,679,258 column 16 lines 54 - 67 regarding original Application 10/729,765 Claim 19 concerning vacuum control and purging means.

Applicant's response:

Acknowledged with understanding that Examiner does not require revision to original Application 10/729,765.

12th *Examiner's action/comment:*

Notes other prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

Applicant's response:

Acknowledged.

13th *Examiner's action/comment:*

Advises own office availability days/times and phone numbers.

Applicant's response:

Acknowledged.

14th *Examiner's action/comment:*

Advises supervisor's office availability days/times and phone numbers.

Applicant's response:

Acknowledged.

15th *Examiner's action/comment:*

Advises details about PAIR system.

Applicant's response:

Acknowledged.

REQUEST FOR CONSTRUCTIVE ASSISTANCE

The undersigned has made a diligent effort to amend the claims of the application so they define novel structure, which is also submitted to render the claimed structure unobvious. If, for any reason the claims of this application are not believed to be in full condition for allowance, Applicant respectfully requests the constructive assistance and suggestions of the Examiner in drafting one or more acceptable claims pursuant to MPEP 707.07(j), or in making constructive suggestions pursuant to MPEP 706.03(d), in order that this Application can be placed in allowable condition as soon as possible and without the need for further proceedings.

CONCLUSION

For all the reasons given above, Applicant respectfully submits that the claims comply with Section 112, that the claims define over the prior art under section 102, and that the claimed distinctions are of patentable merit under Section 103 because of the new results provided. Accordingly, Applicant submits that this Application is now in full condition for allowance, which action Applicant solicits.

Very respectfully,



Robert N. Petersen, Applicant pro se

2300 39th Street

Bellingham, WA 98229-3380

Home Voice: (360) 738-4069 Home Fax: (360) 715-1786 Work Voice: (360) 332-8820

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Date: 2006 July 24

Signed:

